Lake Winona dredging documents

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Cal

1/29/96

Would you look over the
press release, EAW, and
please give Judge
Washington? Please get back to
me this week if you desire
any changes.

Thruke

Bob Bollard
DREDGE 1,260,000 CU. YDS. OF SAND FROM THIS AREA TO FILL 72.5 ACRES IN RIVERBEND INDUSTRIAL PARK. DREDGE TO 30' DEPTH TO MAXIMIZE SAND REMOVAL. DROP MUCK TO LAKE BOTTOM. APPROXIMATE NEW LAKE BOTTOM ELEVATION 624.0. 56.0 ACRE AREA ESTIMATED TO BE DREDGED.

DREDGE 125,200 CU. YDS. MUCK FROM THIS AREA. DREDGE TO A 16' DEPTH AND PLACE 2.0' DEEP MUCK FILL ON TOP OF DREDGED SAND FILL ON TOP OF DREDGED SAND FILL IN RIVERBEND. 9.7 ACRE AREA ESTIMATED TO BE DREDGED.
P.A. denotes Port Authority of Winona

Plan View - Disposal Area
Lake Winona Dredging
October, 1995
Sheet 3 of 4 Sheets

72.5 Acres To Be Filled
APPROXIMATE NEW LAKE BOTTOM ELEVATION AFTER MUCK DROPS DOWN

646.5 NORMAL LAKE LEVEL

EXISTING LAKE BOTTOM 624.0

PROPOSED DREDGE ELEVATION 616.5

SCALE
HORIZ. 1" = 400'
VERT. 1" = 40'

SECTION A - A
CROSS SECTION - LAKE DREDGING

TOP OF DIKE
TOP OF MUCK FILL 658.0
TOP OF SAND DIKE 659.0
TOP OF SAND FILL 656.0

NORMAL LAKE OUTLET DITCH ELEVATION 645.5

SCALE
HORIZ. 1" = 400'
VERT. 1" = 10'

SECTION B - B
CROSS-SECTION - DISPOSAL AREA

SECTION VIEW
LAKE WINONA DREDGING
OCTOBER, 1995
SHEET 4 OF 4 SHEETS
1. Original Plan: Dredge one million cubic yards of sand from area near Mankato Avenue.

2. Dredge *silt and **organic ooze back into sand hole - deepen 140 AC of East Lake to 16' depth or greater.

3. Lake was sounded in May 1986 with help of Charles Robers and his crew.

4. Plan had to be changed - cannot place silt and organic ooze back into Lake - DNR.

5. Old plan: 140 Acres to 16' depth or greater.

6. New Plan: Pull sand from beneath silt, dredge to 30' depth, dredge area with most sand, 3/4 of silt will drop down.

7. Need 950,000 cubic yards of sand to fill 81 AC. Stockpile 350,000 cubic yards for use in Lake Park and Schain Industrial Park.

Dredge 1,300,000 cubic yards sand
Stock pile 350,000 cubic yards
129,000 cubic yards for 10 AC filled w/silt
479,000 cubic yards

14.8 AC, 20' high

Push silt and organic ooze to corner, mine out for Lake Park or sell and then refill with sand.

* Mainly topsoil washed in from Gilmore Valley and West Burns Valley.

** Nutrient-rich semi-solids formed within the lake from dead weeds, plankton and fish, but also from leaves and grass clippings from storm sewers.
8. Place 2.0', 180,000 cubic yards of organic ooze on top of sand, dry to 1.0', dredge out 14 AC west of hospital, deepen Lake from 8' to 16'.

Rec by Lake Winona Committee, ready to meet as resource.

9. Will end up with approximately 1/2 of East Lake to 16' or greater.

10. February 22 - from ice:
Five test holes were drilled, samples had to be split for second lab analysis.

Tested according to Corps requirements

Confirmed that 1986 sounding plan was accurate.

Test for:
Volatile solids
11 heavy metals
Chlorinated hydrocarbons
DDT
Pesticides
PCBs

Split sample for second lab analysis

Schedule
11. Submit test data to required agencies

12. Go through environmental assessment

13. Obtain permits

14. Develop Financing plan
DREDGING LAKE WINONA
MARCH, 1995

Cost Estimate
1. Dredging sand 1,300,000 cy @$2.10/cy
   (pay on in place volume) $2,730,000
2. Dredging muck to be placed on top of sand
   2.0' deep 180,700 cy @$2.00/cy 361,400
3. Clearing 81 acres @$500/AC 40,500
4. Grub Bruski Drive and street East of Bruski
   (3,700 x 70/43,560) = 6.0 AC @$2,000/AC 12,000
5. Mobilization (60% up front)
   Engineering & Testing 100,000
   TOTAL COST 200,000
   $3,443,900

Use 3.5 million
DESIGN NOTES - 1995
DREDGE 1,300,000 CY OF SAND
NEED 950,000 CY TO FILL 81 ACRES

Depth of sand in Lake  14.4'
Depth of muck in Lake  7.2'

I. Sand area to be dredged
\[
\frac{1,300,000 \times 27}{14.4} = 2,437,500 = 55.9 \text{ acres} = 56 \text{ acres}
\]

II. Muck to be dredged from sand area - 25%
\[
2,437,500 \times 7.2 \times 0.25 = 4,387,500 \text{ ft}^2 / 27 = 162,500 \text{ cy}
\]
Pile 10' depth
\[
\frac{4,387,500}{10 \times 43,560} = 10 \text{ Acres in Riverbend}
\]
Pile 350,000 cy of sand + 43,560 x 10 AC x 8 depth
\[
= 129,000 \text{ cy}
\]
\[
350,000 + 129,000 = 479,000 \text{ cy}
\]
Pile 20' high
\[
\frac{479,000 \times 27}{43,560 \times 20} = 14.8 \text{ acres}
\]

III. Area to be covered with 2.0' of muck
\[
81 \text{ AC} - (14.8 + 10) = .56 \text{ Acres}
\]
Muck - Fig. 2.0' Depth
\[
56 \text{ AC} \times 43,560 \times 2 = 180,700 \text{ cy}
\]

IV. Area of muck to be dredged
Dredge 8' depth to 16'
\[
\frac{180,700 \text{ cy} \times 27}{43,560 \text{ sf/AC} \times 8} = 14 \text{ Acres}
\]
\[
+ 56 \text{ AC} = 70 \text{ Acres}
\]

Dredge 70 Acres